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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,974	12/11/2001	Ming-Chang Liu	80398.P467	6368

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EXAMINER

SENF1, BEHROOZ M

ART UNIT	PAPER NUMBER
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2613

DATE MAILED: 12/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/014,974

Applicant(s)

LIU ET AL.

Examiner

Behrooz Senfi

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 8, 10, 11, 13, 18, 24 and 25 is/are rejected.
- 7) ☒ Claim(s) 4-7, 9, 12, 14-17, 19, 20-23, 26 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/14/2005 has been entered.

Claim Objections

2. Claim 24 objected to because of the following informalities:

In claim 24, the status of the claim should be change, from "previously presented" to "currently amended". Appropriate correction is required.

Response to Amendment

3. Applicant's arguments filed 9/14/2005 have been fully considered but they are not persuasive.

Re claims 1 – 3, 11, 18, 24 and 25, applicant asserts (Remarks, page 10, lines 8 – 10) that Iwasaki does not teach or even suggest that inter-frame difference signals are calculated using sets of motion vectors. However, the Smolenski reference is relied upon to teach such features (see figs. 4a – 4b and fig. 7, motion estimation unit 605, col. 3, lines 65 – col. 4, lines 12 and col. 4, lines 24 - 33), not Iwasaki as asserted.

Furthermore, applicant asserts Iwasaki does not disclose newly added limitations of calculating a ratio between the sum of magnitudes of the MVs in two sets as now

recited in claims 1, 11, 18 and 24. However, it is noted that the amended claims recite calculating a ratio from sums of magnitudes of MVs in two sets, not between the sum of magnitudes as asserted. Again, Smolenski not Iwasaki is relied upon as the teaching reference. Thus, Smolenski teaches detecting a repeated field by comparing motion vectors to a threshold, (i.e. fig. 6, 605, col. 3, lines 7 – 9 a frame must have an even field and an odd field and comparison as noted in col. 3, lines 12 - 25, also col. 4, lines 1 – 18 and lines 40 – 51, col. 5, lines 32 - 36) and sums of magnitudes of MVs in two sets, (i.e. col. 4, lines 27 – 38). In Smolenski, one skilled in the art would have recognized that comparison of the motion vector data would have involved evaluating ratios between repeated fields and non-repeated fields. However, because of the lack of explicit teaching of this aspect in Smolenski, Iwasaki was relied upon as a secondary reference (i.e. fig. 2, element 441, cols. 8 – 9, lines 41 – 55 and col. 15, lines 42 – 45) to explicitly substantiate the known technique of comparison of the ratios of MVs for detecting duplicate field as claimed.

Re claims 8, 10 and 13, applicant's arguments with respect to these claims are substantially similar to the previous arguments. Thus, they have been considered.

Re claims 9, 12, 19 and 27, applicant's arguments with respect to these claims are persuasive. Thus, claims 9, 12, 19 and 27 contain allowable subject matter.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 – 3, 11, 18 and 24 - 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smolenski (US 6,058,140) in view of Iwasaki et al (US 5,892,550).

Regarding claims 1 and 24, Smolenski '140 teaches, a method and apparatus for identifying repeated fields in a video sequence, (i.e. fig. 7, abstract, col. 5, lines 24 - 30), and determining the first set and second set of motion vectors from fields of same polarity in first and second input video frames of video sequence, (figs. 4a – 4b and fig. 7, motion estimation unit 605, col. 3, lines 7 – 9 and lines 65 – col. 4, lines 12, that determines a set of field MVs, and col. 4, lines 24 - 33), and identifying a repeated field by comparing of the first set and second set of MVs to a first threshold, (i.e. fig. 6, 605, col. 3, lines 7 – 9 a frame have an even field and an odd field and comparison, unit 605 between two separate frame is done, as noted in, col. 3, lines 12 - 25, also col. 4, lines 1 – 18 and lines 40 – 51), and sums of magnitudes of MVs in two sets, (col. 4, lines 26 – 38).

Smolenski '140 reference is silence in regards to explicit of the comparison of the "ratio" of the MVs.

However, Smolenski '140 compares motion vectors to a threshold, to identify a repeated field; Note, based on the above teaching comparison of the motion vector data, i.e. ratios, must be made to sort out the repeated fields from the non-repeated fields. Furthermore;

Iwasaki '550 (i.e. fig. 2, element 441, cols. 8 – 9, lines 41 – 55 and col. 15, lines 42 – 45) teaches the explicit of the well-known features comparison of the “ratio” of the MVs for detecting duplicate field.

Hence, based on the teaching of the well known features of using, ratio of the MVs as taught by Iwasaki, would rendered the claim limitation obvious to one skilled in the art for correctly detecting/identifying and/or removing repeated/duplicate fields (col. 4, lines 52 – 54).

Regarding claims 2 – 3 and 25, combination of Smolenski '140 and Iwasaki '550 teach, “first set of motion vectors is between a first field of the first frame and a first field of the second frame and the second set of motion vectors is between a second field of the first frame and a second field of the second frame” (video frames comprises of two video fields, and the motion vectors are between the video fields, of the first field of the first frame and the first field of the second frame and so on, col. 3, lines 7 - col. 4, lines 33).

Regarding claim 11, the limitations claimed have been analyzed and rejected with respect to claims 1 and 24.

Regarding claim 18, the limitations claimed, are computer program instructions of claim 1, wherein, when executed by a processor cause the processor to perform method of claim 1, therefore the ground for rejecting claim 1 also applies here. Since 3:2 pull-down process illustrated in fig. 7, is computer implemented and the software or programs to carry out the instructions would have been necessitated by the system.

6. Claims 8, 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smolenski '140 and Iwasaki '550 as applied to claims 1 – 3, 18 and 24 – 25 above, further in view of Rao et al (US 6,041,142).

Regarding claim 8, combination of Smolenski '140 and Iwasaki '550 teaches, identifying repeated fields in a video sequence and determining set of motion vectors from input video frames, as discussed with respect to claim 1.

Combination of Smolenski '140 and Iwasaki '550 reference is silence in regards to; threshold is a heuristically determined value.

However, such features are well known and used in the prior art of the record as evidenced by Rao '142 (i.e. figs. 8b – 8c, col. 8, lines 1 – 11), wherein teaches heuristic threshold value based on the desired condition.

Taking the combined teaching of Smolenski '140 and Iwasaki '550 and Rao '142 as a whole, it would have been obvious to one skilled in the art at the time of the invention was made to modify the thresholding process of combination of Smolenski and Iwasaki with a heuristically determined value threshold as taught by Rao '142, for identifying a repeated field more accurately based on the desired condition.

Regarding claim 10, combination of Smolenski '140 and Iwasaki '550 and Rao '142 teach, averaging the repeated field, (i.e. col. 64, lines 61 – 66 of Rao).

Regarding claim 13, the limitations claimed have been analyzed and rejected with respect to claim 10.

Allowable Subject Matter

7. Claims 4 – 7, 9, 12, 14 – 17, 19, 20 – 23 and 26 - 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is an examiner's statement of reasons for allowance:

The prior art of the record fails to anticipate or rendered obvious the limitation, determining a third set of motion vectors between the first field of the second frame and the first field of the third frame; wherein identifying further comprises comparing a first ratio of the first set of motion vectors and the second set of motion vectors to the first threshold, comparing a second ratio of the first set of motion vectors and the third set of motion vectors to the first threshold, and identifying a repeated field if the first ratio and the second ratio are less than the first threshold, in claims 4 – 7, 14 – 17, 20 – 23 and 26, and wherein if a repeated field is identified, replacing the repeated field with a reference to a field from which the repeated field is repeated, in claims 9, 12, 19 and 27.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Behrooz Senfi** whose telephone number is

(571) 272-7339.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Mehrdad Dastouri** can be reached on **(571) 272-7418**.

Hand-delivered responses should be brought to Randolph Building, 401 Dulany Street, Alexandria, Va. 22314.

Any inquiry of a general nature or relative to the status of the application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is **(571) 272-6000**,


Or faxed to:

(571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

B.M.S.

11/26/2005


VU LE
PRIMARY EXAMINER